

## Immunology of neural stem cell fate and function

### Grant Award Details

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Immunology of neural stem cell fate and function

**Grant Type:** Comprehensive Grant

**Grant Number:** RC1-00134

**Investigator:**

**Name:** Theo Palmer  
**Institution:** Stanford University  
**Type:** PI

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**Disease Focus:** Trauma

**Human Stem Cell Use:** Adult Stem Cell, Embryonic Stem Cell

**Award Value:** \$2,396,000

**Status:** Closed

### Progress Reports

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**Reporting Period:** Year 2

**View Report**

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**Reporting Period:** Year 3

**View Report**

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**Reporting Period:** Year 4

**View Report**

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**Reporting Period:** Year 5 NCE

**View Report**

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## Grant Application Details

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**Application Title:** Immunology of neural stem cell fate and function

**Public Abstract:** One of the most difficult yet ultimately rewarding goals in stem cell research is to repair damaged neural systems with newly generated neurons. Our work examining neuronal integration and survival in the postnatal and adult brain shows that incoming neurons are uniquely and exquisitely sensitive to the immune response and inflammation that is always present when cells are transplanted into the injured or diseased brain or spinal cord. Here we propose to: 1) further refine our understanding of the molecular mechanisms that promote or inhibit new neuron integration; 2) evaluate pharmacological or biological methods for enhancing transplant efficiency and 3) test the developed techniques in a model of stem cell therapy for treating children who suffer neurological damage due to treatment for brain cancer. Future studies anticipate the use of these interventions to improve stem cell therapies for a variety of neurological injuries and diseases.

**Statement of Benefit to California:** The proposed studies focus on a critical yet poorly characterized aspect of stem cell therapy in the brain and spinal cord. Advances in these studies would not only stimulate new clinical studies but would also create novel biotechnologies, bringing new commercial opportunities to the state of California. The emphasis on immunological aspects of cellular transplant in this proposal are not only applicable in a neurological context but may be broadly beneficial across many therapies where stem cell-derived transplants are contemplated.

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